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### REMARKS

The present response is intended to be fully responsive to all points of objection and/or rejection raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application is respectfully requested.

Applicants assert that the present invention is new, non-obvious and useful. Prompt consideration and allowance of the claims is respectfully requested.

### Status of Claims

Claims 1 - 4, 8 - 9, 11, 13, 21 - 25 and 31 - 39 remain pending in the application. Claims 5 - 7, 10, 12, 14 - 20, 26 - 30 and 40 - 60 have been cancelled without prejudice or disclaimer. Applicants reserve all rights to file a divisional or continuation application for the cancelled subject matter. Claims 1, 8 - 9, 11, 13, 21, 23 - 25, 31 - 36, 38 and 39 have been amended.

### Remarks to the Specification

In the office Action, the Examiner requested that on page 1 of the specification, the status of the parent application would be updated. Accordingly, Applicants have amended the first paragraph on page 1 titled "Cross reference to related applications" to reflect the current status of the parent application.

### 35 U.S.C. § 102 Rejections

In the Office Action, the Examiner rejected claims 1, 2, and 8 under 35 U.S.C. § 102(b), as being anticipated by Hull et al. (US Patent No. 5,192,449). Applicants respectfully traverse the rejection of claims 1, 2, and 8 under 35 U.S.C. § 102(b) in view of the amendments made and the remarks that follow.

As is well established, in order to successfully assert *a prima facie* case of anticipation, the Examiner must provide a single prior art document that teaches every element and limitation of the claim or claims being rejected.

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Independent claim 1 recites "said support structure is self-supporting and comprises at least one pillar of said first material dispensed within said second material, said pillar not being in contact with said three-dimensional object".

It is respectfully asserted that Hull et al. does not teach or fairly suggest at least this feature of claim 1. Specifically, Hull describes a method for dispensing material in sheets and selectively curing a portion of the material. The selective curing cures the bulk material, such as the polymer sheet at desired positions and the remaining uncured material is removed. Accordingly support structures are not used with the method as taught by Hull.

Therefore, applicants submit that Hull et al. fails to teach, either expressly or inherently, all the elements of claim 1, at least because this reference does not teach a self-supporting support structure that comprises at least one pillar of first material dispensed within second material, said pillar not being in contact with said three-dimensional object.

Thus, applicants assert that Hull et al. cannot anticipate claim 1 and that claim 1 is allowable. It is requested that the rejection of independent claim 1 under 35 U.S.C. § 102(b) be withdrawn.

Claims 2 and 8 are dependent on claim 1 and incorporate all the elements of this claim. Therefore, it is respectfully submitted that claims 2 and 8 are patentable, and thus allowable, at least for all the reasons set forth above. Accordingly, it is requested that the rejection of claims 2 and 8 under 35 U.S.C. § 102(b) be withdrawn.

In the Office Action, the Examiner rejected claims 1 - 9 under 35 U.S.C. § 102(b), as being anticipated by Napadensky et al. (US Patent No. 6,569,373 B2).

In the Office Action, the Examiner rejected claims 1 - 9 under 35 U.S.C. § 102(b), as being anticipated by Gothait (US Patent No. 6,658,314 B1).

Claims 5 - 7 have been cancelled and therefore the rejection of these claims is now moot. Applicants respectfully traverse the rejection of claims 1 - 4 and 8 - 9 under 35 U.S.C. § 102(b), as being anticipated by Napadensky et al. or Gothait in view of the amendments made and the remarks that follow.

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As is well established, in order to successfully assert *a prima facie* case of anticipation, the Examiner must provide a single prior art document that teaches every element and limitation of the claim or claims being rejected.

Independent claim 1 recites "said support structure is self-supporting and comprises at least one pillar of said first material dispensed within said second material, said pillar not being in contact with said three-dimensional object". Napadensky et al. does not teach or fairly suggest at least this feature of claim 1. Moreover, the Examiner admits that Napadensky et al. do not explicitly teach the aspect of pillars (see page 7 of the office action).

Likewise, Gothait does not teach or fairly suggest at least this feature of claim 1 and the Examiner admits that Gothait does not explicitly teach the aspect of pillars (see page 7 of the office action).

Therefore, applicants submit that Napadensky et al. fails to teach, either expressly or inherently, all the elements of claim 1, at least because this reference does not teach a self-supporting support structure that comprises at least one pillar of first material dispensed within second material, said pillar not being in contact with said three-dimensional object.

Likewise, applicants submit that Gothait fails to teach, either expressly or inherently, all the elements of claim 1, at least because the Gothait reference does not teach a self-supporting support structure that comprises at least one pillar of first material dispensed within second material, said pillar not being in contact with said three-dimensional object.

Thus, applicants assert that neither Napadensky et al. nor Gothait anticipate claim 1 and that claim 1 is allowable. It is requested that the rejection of independent claim 1 under 35 U.S.C. § 102(b) be withdrawn.

Claims 2 - 4 and 8 - 9 depend, directly or indirectly from claim 1 and incorporate all the elements of this claim. Therefore, it is respectfully submitted that claims 2 - 4 and 8 - 9 are patentable, and thus allowable, at least for all the reasons set forth above. Accordingly, it is requested that the rejection of claims 2 - 4 and 8 - 9 under 35 U.S.C. § 102(b) be withdrawn.

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### 35 U.S.C. § 103 Rejections

The Examiner rejected claims 3 - 7 and 9 - 13 under 35 U.S.C. 103(a), as being unpatentable over Hull et al. (U.S. Patent 6,192,559). Specifically, the Examiner contended that the claimed limitations would have been obvious to one of ordinary skill in the art at the time the invention was made in view of Hull et al principally in order to manufacture a desired three-dimensional object.

Claims 5 - 7, 10 and 12 have been cancelled and therefore the rejection of these claims is now moot.

Applicants respectfully traverse the rejection of claims 3, 4, 9, 11 and 13 under 35 U.S.C. § 103(a) in view of the amendments made and the remarks that follow.

"To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)" [MPEE §2142]

The rejected claims, dependent claims 3 - 4, 9, 11 and 13 are dependent, directly or indirectly, from claim 1 and include all the limitations of the parent claim. Therefore, the patentability of claims 3 - 4, 9, 11 and 13 follows directly from the patentability of claim 1. Accordingly, the following discussion related to the patentability of claim 1 is likewise applicable to the patentability of claims 3 - 4, 9, 11 and 13.

Independent claim 1 recites "said support structure is self-supporting and comprises at least one pillar of said first material dispensed within said second material, said pillar not being in contact with said three-dimensional object". It is respectfully asserted that Hull et al. does not teach or fairly suggest at least this feature of claim 1. Instead, Hull describes a method for dispensing material in sheets and selectively curing a portion of the material. The selective curing cures the bulk material, such as the polymer sheet at desired positions and the remaining uncured material is removed. Accordingly support structures are not used with the method as taught by Hull.

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Accordingly, there is no suggestion or motivation in the Hull reference to modify the reference teaching to include a support structure that is "self-supporting and comprises at least one pillar of said first material dispensed within said second material, said pillar not being in contact with said three-dimensional object" or any other support structure.

Since claims 3, 4, 8, 9, 11 and 13 depend, directly or indirectly, from independent claim 1, and therefore include all the limitations of this claim, Applicants assert that claims 3, 4, 8, 9, 11 and 13 would not be obvious over Hull et al and request that the rejection of these claims be withdrawn.

The Examiner rejected claims 10-13 under 35 U.S.C. 103(a), as being unpatentable over either Napadensky et al (U.S. Patent 6,569,373) or Gothait (U.S. Patent 6,658,314).

According to the Examiner, the claimed limitations would have been obvious to one of ordinary skill in the art at the time the invention was made in view of either Napadensky et al or Gothait principally in order to manufacture a desired three-dimensional object.

Claims 10 and 12 have been cancelled and therefore the rejection of these claims is now moot. Applicants respectfully traverse the rejection of claims 11 and 13 under 35 U.S.C. § 103 (a) in view of the amendments made and the remarks that follow.

The rejected claims, dependent claims 11 and 13 are dependent, directly or indirectly, from claim 1 and include all the limitations of the parent claim. Therefore, the patentability of claims 11 and 13 follows directly from the patentability of claim 1. Accordingly, the following discussion related to the patentability of claim 1 is likewise applicable to the patentability of claims 11 and 13,

Independent claim 1 recites "said support structure is self-supporting and comprises at least one pillar of said first material dispensed within said second material, said pillar not being in contact with said three-dimensional object". Applicants assert, that neither Napadensky et al nor Gothait teach, suggest or render obvious any of the limitations of claim 1 as presently claimed.

Moreover, the Examiner admits that neither Napadensky et al. nor Gothait explicitly teach the aspect of pillars (see page 7 of the office action). Applicants respectfully submit

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that there is no suggestion or motivation in the Napadensky reference to modify the reference teaching to include a support structure that is "self-supporting and comprises at least one pillar of said first material dispensed within said second material, said pillar not being in contact with said three-dimensional object" or any other support structure that includes pillars.

Likewise, Applicants respectfully submit that there is no suggestion or motivation in the Gothait reference to modify the reference teaching to include a support structure that is "self-supporting and comprises at least one pillar of said first material dispensed within said second material, said pillar not being in contact with said three-dimensional object" or any other support structure that includes pillars.

Since claims 11 and 13 depend, directly or indirectly, from independent claim 1, and therefore include all the limitations of this claim, Applicants assert that claims 11 and 13 would not be obvious over Napadensky et al or Gothait.

The Examiner rejected claims 21 - 25 under 35 U.S.C. 103(a), as being unpatentable over either Masters (U.S. Patent 5,216,616) in combination with either Kieronski (U.S. Patent 6,364,986) or Gruel et al (DE 19537264).

Applicants respectfully traverse the rejection of claims 21 - 25 under 35 U.S.C. § 103(a) in view of the amendments made and the remarks that follow.

Without conceding the appropriateness of the combination, Applicants respectfully submit that the combination of Masters, Kieronski and/or Greul does not meet the requirements of an obviousness rejection at least in that the combination fails to teach or suggest all the elements of the claims. According to the Office Action, Masters teaches a process of making a three-dimensional object as claimed, except that Masters does not explicitly teach selectively dispensing a material to form a container (or mold), which is taught by Kieronski and Gruel et al.

The office action further contended that "it would have been obvious to one of ordinary skill in the art at the time the invention was made in the process of Masters, in view of either Kieronski or Gruel et al, principally in order to provide a containment (or mold)

structure for a three-dimensional object and/or support material while the three-dimensional object is manufactured".

Firstly, applicants disagree with the contention that "Masters teaches a process of making a three-dimensional object as claimed, except that Masters does not explicitly teach selectively dispensing a material to form a container". Masters does not teach or suggest, at least, "dispensing a curable build material used to form at least the three dimensional object and at least part of a support structure, and "dispensing a support material used to form at least part of the support structure, the build material being solid after curing and the support material being at least partly liquid after curing", as recited by amended claim 21 (emphasis added).

Rather, Masters teaches two materials being used to form each either an object or a support structure, respectively.

Further, applicants disagree with the contention that "it would have been obvious to one of ordinary skill in the art at the time the invention was made in the process of Masters, in view of either Kieronski or Gruel et al, principally in order to provide a containment (or mold) structure for a three-dimensional object and/or support material while the three-dimensional object is manufactured".

Independent claim 21 recites "selectively dispensing the build material to form a container capable of holding said support material; said container and said support material comprising a support structure for said three-dimensional object" (emphasis added). The office Action relies on Kieronski and Greul for teaching this limitation.

Neither Kieronski nor Greul disclose, teach or suggest, alone or in combination with Masters, at least, "selectively dispensing the build material to form a container capable of holding said support material; said container and said support material comprising a support structure for said three-dimensional object".

Instead, Kieronski discloses construction of a stereolithographic part by forming inner and outer shells to form a mold or cast and then filling the mold or cast with a secondary material. Likewise, Gruel teaches construction of a part by forming a mold or cast and then filling the mold or cast with a secondary material. In Gruel, the mold or cast is

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embedded in a powder, e.g. a metallic powder, for support during its continued construction: *"...in ein Schwermetallpulver eingebettet werden."* (col. 2, lines 60-1 "... embedded in a metallic powder.")

Accordingly, Applicants respectfully submit that independent claim 21 is allowable and requests that the 35 U.S.C. § 103(a) rejection of claim 21 be withdrawn.

Rejected dependent claims 22 - 25 are dependent, directly or indirectly, from claim 21 and include all the limitations of the parent claim. Therefore, the patentability of claims 22 - 25 follows directly from the patentability of claim 21. Accordingly, Applicants request that the 35 U.S.C. § 103(a) rejection of claims 22 - 25 be withdrawn.

The Examiner rejected claims 31-39 under 35 U.S.C. § 103(a), as being unpatentable over Napadensky et al. (U.S. Patent 6,569,373 B2) in combination with Leyden et al. (U.S. Patent 6,193,923 B1).

The Examiner rejected claims 31-39 under 35 U.S.C. § 103(a), as being unpatentable over Gothait (U.S. Patent 6,658,314 B1) in combination with Leyden et al. (U.S. Patent 6,193,923 B1).

Applicants respectfully traverse the above rejections of claims 31 - 39 under 35 U.S.C. § 103(a) in view of the amendments made and the remarks that follow.

Without conceding the appropriateness of the combinations, Applicants respectfully submit that the neither the combination of Napadensky and Leyden nor the combination of Gothait and Leyden meet the requirements of an obviousness rejection at least in that the combinations fail to teach or suggest all the elements of the claims.

In particular, neither the combination of Napadensky and Leyden nor the combination of Gothait and Leyden teach or suggest, at least, "said support structure comprising a plurality of fine pillars which are not in contact with said three-dimensional object, said pillars being surrounded by said support material and separated from said three-dimensional object by a release layer of said support material", as recited in amended claim 31(emphasis added).



The office action contended that it would have been obvious to one of ordinary skill in the art at the time the invention was made in the process of either Napadensky et al or Gothait, in view of Leyden et al, principally in order to provide a desired and/or required support structure during manufacture of a three-dimensional object". Applicants disagree with this contention.

The Office action admits that neither Napadensky et al. nor Gothait teach the aspect of pillars and relies on the teaching of Leyden and in particular Fig. 2 of Leyden. Leyden, however, does not teach or suggest "fine pillars which are not in contact with said three-dimensional object, said pillars being surrounded by said support material and separated from said three-dimensional object by a release layer of said support material", as recited in amended claim 31. This support structure may provide sufficient support for the three-dimensional object, yet does not damage the surface of the three-dimensional object upon its removal.

In contrast, the support construction taught by Leyden provides pillars not surrounded by any other support material and in contact with the three-dimensional object as can be clearly seen by Figs 2, 20 and 21a-b of Leyden. Fig. 2 illustrates two types of columnar supports, The first type of pillars, which are widely spaced from one another to minimize damage to the three-dimensional, are not suitable as support (see col. 5, lines 1 – 10) and the second type of pillars, which are closely spaced together to provide an effective support, are not suitable as they cause more damage when removed.

Leyden teaches various support structures, none of which disclose or slightly suggest "fine pillars which are not in contact with said three-dimensional object, said pillars being surrounded by said support material and separated from said three-dimensional object by a release layer of said support material", as recited in amended claim 31.

Accordingly, Applicants respectfully submit that independent claim 31 is allowable and requests that the 35 U.S.C. § 103(a) rejection of claim 31 be withdrawn.

Rejected dependent claims 32 - 39 are dependent, directly or indirectly, from claim 31 and include all the limitations of the parent claim. Therefore, the patentability of claims

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32 - 39 follows directly from the patentability of claim 31. Accordingly, Applicants request that the 35 U.S.C. § 103(a) rejection of claims 32 - 39 be withdrawn.

### **Double Patenting Rejections**

In the Office Action, the Examiner rejected claims 1-13 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-42 of U.S. Patent No. 6,569,373.

The Examiner further rejected claims 1-13 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of U.S. Patent No. 6,658,314.

The Examiner further rejected claims 31-39 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-42 of U.S. Patent No. 6,569,373 in view of Leyden et al, (U.S. Patent No. 6,193,923).

The Examiner further rejected claims 31-39 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of U.S. Patent No. 6,658,314 in view of Leyden et al. (U.S. Patent No. 6,193,923).

Claims 1-13 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7 of copending Application No. 10/724,399.

Claims 1-13 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 80-105 of copending Application No. 10/725,995.

Independent claims 1 and 31 have been amended. Without consenting to the appropriateness of the double patenting rejections, Applicants respectfully assert that amended claims 1 and 31 are patentably distinct from the any claim of any of the above mentioned patents or applications. Accordingly, Applicants request that the Double Patenting Rejections of claims 1 - 13 and 31 - 39 be withdrawn.

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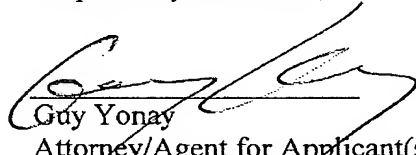
### CONCLUSION

In view of at least the foregoing amendments and remarks, the pending claims are allowable. Their favorable reconsideration and allowance is respectfully requested.

Should the Examiner have any question or comment as to the form, content or entry of this Amendment, the Examiner is requested to contact the undersigned at the telephone number below. Similarly, if there are any further issues yet to be resolved to advance the prosecution of this application to issue, the Examiner is requested to telephone the undersigned counsel.

The Office is hereby authorized to charge any fees associated with this paper to deposit account No. 50-3355.

Respectfully submitted,

  
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